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Original communication

An assessment of suicide attempts by self-poisoning in the west of Iran

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ABSTRACT

Intentional self-poisoning that is widely used all over the world is one of the most common methods of suicide. This study aim was to determine the rate of attempted intentional self-poisoning and to identify high risk persons in the west of Iran (Kermanshah). A total of 3138 people (1279 M and 1859 F) studied. The average annual rate of suicide in Kermanshah was 153 persons per 100 000 people. The most number of attempted intentional self-poisoning (55.5%) were in the 20–29 year age group. The most popular toxic substances for self-poisoning were drugs (71%) and oil and fuels (15%), respectively. The most number of intentional self-poisoning suicides are attempted by drugs. By considering the high rate of intentional self-poisoning, low age of suicide attempts and also its high mortality rate in Kermanshah, it is necessary to stop the opportunity to buy over-the-counter (OTC) drugs , especially those being most misused.

1. Introduction

Suicide is a psychical-social issue that is continuously increasing in most communities due to complex interactions and relations. Intentional self-poisoning is one of the most common methods of suicide and is widely spread all over the world.[1–3] Poisoning is defined as unfavorable complications caused by the use of drugs, chemical substances and other materials. These unfavorable complications are more severe in young and elderly people.[4]

The method of attempted intentional self-poisoning is dependent upon the cultural-social factors of each region, and also toxicants and available drugs.[5] The importance of self-poisoning suicides is that the repetition of such behavior is very prevalent compared to the other methods of suicide.[3] In order to effectively plan and intervene to decrease financial and spiritual costs of this health problem, the appropriate and accurate information and identification of related risk factors is essential.[6–8] This study aim was to determine the rate of attempted intentional self-poisoning and to identify high risk persons in the west of Iran (Kermanshah).

2. Method

2.1. Study population

This was a descriptive and analytical cross-sectional study in which all cases of intentional self-poisoning suicides referred to hospital or cases who had died due to severe poisoning during 2010–2013 (30 months) were obtained through two sources of Kermanshah forensic medicine and the only poisoning referral center of Kermanshah, Imam Khomeini Hospital, which is the main poisoning referral center in the west of Iran.

2.2. Analysis

The relevant data were obtained through different methods including interviews with those who have attempted intentional self-poisoning, their friends and relatives or medical records. Intentional self-poisoning rates for different groups were calculated using the official national census conducted in 2011 and also information from the Organization for Civil Registration. These rates

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were standardized through direct method using world standard population.[9]

The data analyzed using Excel and statistical package of STATA (version 11) and also Chi-square, analysis of variance (ANOVA), Poisson regression and independent *t*-test tests.

3. Ethical considerations

A group of Imam Khomeini hospital psychologists interviewed with intentional self-poisoning attempters or their friends and relatives. The present study was conducted according to the Helsinki Declaration. The Ethical Committee of Kermanshah University of Medical Sciences has accepted the method of this study.

3.1. Results

3138 persons including 1279 men (40.8%) and 1859 women (59.2%) have attempted self-poisoning suicides between the second half of 2010 and 2013 (30 months) in Kermanshah (Iran). 77 persons (0.024%) including 30 women (39%) and 47 men (61%) of intentional self-poisoning suicide attempters died due to severe poisoning. The relationship between gender and intentional self-poisoning mortality rate was statistically significant (p-value < 0.001).

The mean age of the cases of intentional self-poisoning leading to death (30 ± 16 years; Mean $\pm$ SD) was higher than the intentional self-poisoning cases that not leading to death.

The average rate of annual suicide was 153 persons per 100 000 people (190 for women and 119 for men) in Kermanshah. Thus, the gender differences in suicide attempts are significant (p-value < 0.001). The standardized rates for men, women and both sexes were 58.6, 91.3 and 74.8/100 000 respectively.

1735 persons (55.5%) of the intentional self-poisoning attempters were in the age group 20–29 years old. The lowest incidence observed among people older than 50 years old (Table 1).

The rate of attempted intentional self-poisoning in military men was 42 times higher than administrative officers and clerical staff. In addition, the rate of attempted intentional self-poisoning in divorced people was 2.3 times higher than married couples (Table 2).

2228 people (71%) had used drugs for intentional self-poisoning. Tramadol and Methadone tablets had been misused more than other drugs.

Half of intentional self-poisonings in people who had used narcotics was because of Heroin consumption (Fig. 1). Some patients do not mentioned the kind of substance they had used.

2979 people of unsuccessful intentional self-poisoning attempters feel sorry for themselves.

Table 1
Difference between crude and adjusted self-poisoning attempted suicide in 2010–2013, Kermanshah, Iran.

Variable state		*N* (%)	Crude rate[a]	Age-standardized rates[b]	*P*_value
Gender	Male	1279(40.8)	119	58.6	0.001
	Female	1859(59.2)	190	91.3	
Age	10–19years	870(27.8)	160.58	14.28	0.001
	20–29years	1735(55.5)	309.79	18.72	
	30–39years	302(9.7)	83.05	6.8	
	40–49years	124(4)	44.28	4.8	
	over50years	93(3)	31.94	3.6	
	unknown	14(0.004)	–	–	

[a] Crude rate per 100 000 for males and females aged 10 and over.
[b] Age-standardized rates for intentional self-poisoning in west of Iran for males and females aged 10 and over.

Table 2
Demographic characteristics of self-poisoning attempted suicide in 2010–2013, Kermanshah, Iran.

Variable	State	*N* (%)	Rate per 100,000	*p*
Marital state	Married	1211(38.6)	115.23	0.001
	Single	1643(52.4)	184.73	
	Separated	135(4.3)	264.69	
	Widow	33(1)	142.5	
	Unknown	116(3.7)	–	
Education state	Illiterate	164(5.3)	71.61	0.001
	Elementary	361(11.5)	74.58	
	Secondary	700(22.3)	155.57	
	Diploma	1565(49.9)	253.36	
	Academic	297(9.4)	65.99	
	Unknown	51(1.6)	–	
Occupation	Student	1554(49.5)	323.6	0.001
	Housewife	535(17)	91.25	
	Office worker	180(5.7)	12	
	Military	487(15.5)	507.12	
	Unemployed	174(5.5)	104.04	
	Farmer	55(1.7)	68.05	
	Other	153(4.8)	–	

We were able to investigate the feelings of regret of 2979 unsuccessful intentional self-poisoning attempters. Among them, 1597 people (53%) were regretful and 1382 people (46%) were not penitent at all, while 1683 people (56%) had a history of suicide. Between all of the unsuccessful intentional self-poisoning attempters, 1683 people (56%) had a history of suicide. So that the average number of suicide attempts in each person was 1.1 ± 1.5 times.

On the basis of our study, attempted intentional self-poisoning has a seasonal trend, so that the highest number of suicides happened in spring and summer and the lowest number of suicides were related to the cold months (Fig. 2).

Most self-poisoning suicides were attempted in the early evening (18:00–20:00) and the fewest suicides were attempted at midnight and early morning (01:00–08:00) (Fig. 3).

Among 3138 people who had attempted suicide by self-poisoning, we could identify the history of 2735 people who had used narcotics, between them 473 people (17%) had industrial or traditional substance dependency.

4. Discussion and conclusion

4.1. Mortality and prevalence

Findings showed that attempted self-poisoning suicides are more than other suicide methods[10] that is consistent with western countries.[11] Intentional self-poisoning is one of the most common methods of suicide in Asia; for example self-poisoning suicide is the primary suicide method in five countries; China,[12] India,[13] Pakistan,[14] Bangladesh,[15] and Sri Lanka.[16] In European countries

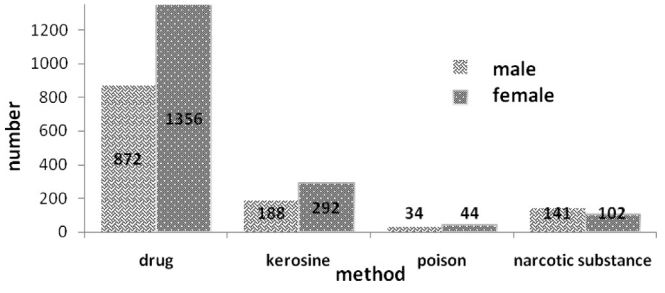

Fig. 1. Kind of drugs used for intentional self-poisoning attempted suicide by sex 109 persons had used other substances such as stucco, alcohol and … for poisoning.

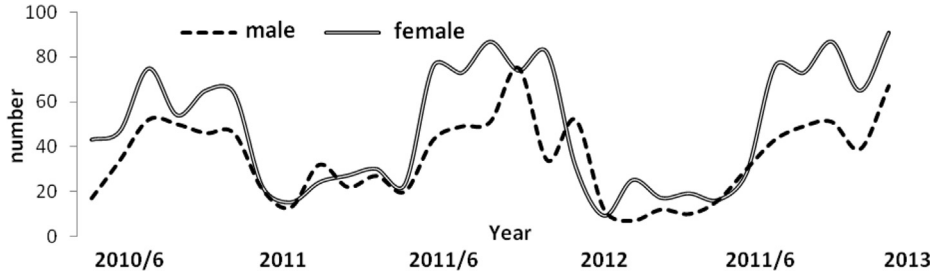

Fig. 2. Trend of intentional self-poisoning attempted suicide during 2010–2013 by sex.

like Finland, Iceland, England, and Scotland, more than half of the suicides among women were attempted by intentional self-poisoning.[17]

In the present study, the rate of suicide attempts leading to death is less than other studies that is about 10 percent.[18] Generally, intentional self-poisoning is one of the most common methods of suicide and one of the common methods of suicide leading to death.

4.2. Age and sex

Suicide attempts among women were higher than men; this is consistent with other studies,[19] so that the rate of suicide leading to death in men was higher than women in studies conducted in Iran[20] and the United States.[21] However, it is contradictory with studies conducted in 16 European countries where the ratio of mortality from intentional self-poisoning was equal to "1" between the two sexes.[22] This difference can be due to different factors such as urbanization[23] and cultural differences.[15]

The highest rate of suicide attempts was found in the younger age group; this is similar to the results of studies conducted in Iran and other parts of the world.[24] The findings of the present study showed that there is a significant difference between the age of people unsuccessfully attempting suicide and those who succeed. This difference can be due to different factors such as the use of higher doses of toxicants and drugs and also more toxicant drugs among older people.[25]

Overall, The age of suicide attempt and its mortality in Kermanshah is lower than other places like India,[15] Sir Lanka,[26] Norway[27] and 16 European countries.[22]

It is noteworthy to mention that various studies conducted all over the world shows that the age of those carrying out self-poisoning suicide attempts is lower than other methods of suicide.[28,29]

4.3. Time and trend of self-poisoning attempts

Most self-poisoning suicides were attempted in the evening and before midnight. This finding is consistent with studies conducted in Italy.[30] In terms of seasonal trend, most suicides were attempted in spring and summer. This finding is consistent with studies conducted in Turkey,[31] Brazil,[32] and Austria.[33] This study showed that attempted self-poisoning suicide is a steady trend during time, but in studies conducted in South Korea, Thailand and Japan, it has had an ascending trend.[15] However, in Sri Lanka[26] and Thailand,[34] this rate decreased significantly after banning the use of poisonous pesticides and agricultural chemicals which were used as the main substance for intentional poisoning, while other methods of suicide increased.

4.4. Substances and drugs causing poisoning

More than two third of intentional self-poisonings in Kermanshah were attempted using drugs. This finding is consistent with multi-central WHO/Euro studies conducted in 14 European countries. These studies showed that 73 percent of men and 84 percent of women used drugs for intentional self-poisoning.[22] However, studies conducted in Asian countries, especially Southeast Asia indicate greater use of pesticides and household chemicals.[15] Oil and fuels (15%) were the second factor for poisoning. This finding is consistent with studies conducted in Asian countries, especially Sri Lanka where fuels particularly kerosene were used as a poisoning substance,[17] but is not consistent with studies conducted in European countries. In the present study, a very small percent (7 cases) of self-poisoning suicides were attempted by alcohol, while in western countries, alcohol is one of the most common substance for suicide attempts.[35,36] This difference in the type of substances can be due to availability of substances and cultural differences.[37]

In the present study, at least half of the drugs being misused were Tramadol and Methadone (Identification of the precise percent was not possible because of lack of recording systems and ignorance of would-be suicides when reporting the kind of tablets). In a multi-center study conducted in Europe, more than 70 percent of drugs used in France, Luxembourg, Portugal and Spain were biological drugs (X64), while narcotics and psychodysleptics [hallucinogens] (X62) were mainly used in Scotland.[22]

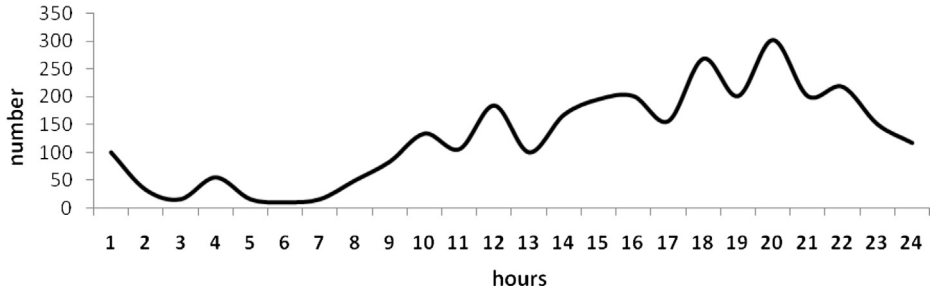

Fig. 3. Time of self-poisoning suicide attempts in Kermanshah.

4.5. Demographic factors affecting suicide attempts

Concerning marital status, most cases of attempted intentional self-poisoning were divorced people.[38] This finding is consistent with the results of other studies. The rate of intentional self-poisoning in high school students were more than other grades. This can be due to factors such as conflict with other family members or friends, and emotional problems of this age group.[39]

Most cases of attempted intentional self-poisoning were unemployed people and pupils. Considering the fact that these two groups have no income, poverty can be implicitly considered as the reason of self-poisoning attempts. Of course, low socio-economic situation is known as one of the reasons of suicide attempts in different researches.[40]

4.6. Strengths and limitations of the study

Employing psychologists and continuous follow-up of group members to minimize missing and bias as well as the use of population-based data are the advantages of the present study. However, like most studies conducted on suicide, this study had limitations such as undercounting and consequently underreporting due to denial of suicide attempts. This denial result from political, cultural and social problems and the taboo that suicide creates for the person and society. Lack of precise identification of the type of drugs and substances used for suicide are other limitations of the present study.

5. Conclusion

The rate of intentional self-poisoning suicides leading to death is much lower than other methods of suicide. However, the rate of suicide attempts with this method and possibility of its repetition are very high; therefore, in order to prevent its incidence and repetition, officials and practitioners should take actions such as preventing the sale of over-the-counterdrugs (OTC), especially Tramadol and Methadone and selecting alternative drugs and decreasing the availability of drugs and substances which are substantially misused.

Ethical approval

None.

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None.

Conflict of interest

There is no conflict of interest in this study.

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